A482 - Volatile anaesthetic consumption and recovery times after long term inhalative sedation using the mirus system - an automated delivery system for isoflurane, sevoflurane and desflurane

AI Georgevici; L Procopiu; D Drees; J Herzog-Niescery; P Gude; H Vogelsang; TP Weber; M Bellgardt
St Josefs Hospital University Clinic Bochum, Anaesthesiology and Intensive Care, Bochum, Germany

Introduction:
The new MIRUS system as well as the AnaConDa uses a reflector to conserve volatile anaesthetics (VA) [1,2]. Both systems can be paired with ICU ventilators, but MIRUS features an automated control of end-tidal VA concentrations (etVA). We compare feasibility and recovery times for inhalational long term sedation with isoflurane (ISO), sevoflurane (SEVO) or desflurane (DES).

Methods:
30 ASA II-IV patients undergoing elective or emergency surgery under general anaesthesia were included. Patients were randomized into three equal groups ISO, SEVO and DES. The MIRUS system was started with a targeted etVA of 0.5 MAC. We used the Puritan Bennett 840 ICU ventilator and performed a spontaneous breathing trial. If successful, the target concentration was set to 0 MAC and recovery times measured.

Results:
Patients were comparable in demographics, tidal volume, respiratory rate and sedation time (total 696h: ISO 19±9h; SEVO 22±19h; DES 29±29h; p=0.55). In all patients, a MAC of 0.5 was reached. ISO 4.7±1.5 ml/h, SEVO 11.7±7.3 ml/h or DES 28.9±5.5 ml/h (p<0.001) were used. Recovery times (p>0.05): Open eyes ([mm:ss]; ISO 15:48±18:05, SEVO 06:11±09:09, DES 04:48±06:36); squeeze hands ([mm:ss]; ISO 20:22±21:20, SEVO 08:22±09:42, DES 03:37±02:47); extubation ([mm:ss]; ISO 26:40±39:12, SEVO 13:27±16:20, DES 04:00±02:00); tell birthday ([mm:ss]; ISO 34:42±39:27, SEVO 14:28±18:02, DES 05:37±02:17). The first extubation attempt was successful in 7, 8 and 5 patients sedated with ISO, SEVO and DES, respectively.

Conclusion:
MIRUS could automatically control end-tidal VA concentrations in ventilated and spontaneously breathing patients. The recovery times are only prolonged in the ISO group and could be shortened by removing the reflector. The higher etVA required for a 0.5 MAC using DES and SEVO were associated with an increased VA consumption.

References: